

On the Extreme Ultra-violet Spectra of Magnesium and Selenium

By PROFESSOR J. C. McLENNAN, F.R.S., MR. J. F. T. YOUNG, M.A.
and Mr. H. J. C. IRETON, M.A.

(Read May Meeting, 1919.)

INTRODUCTION

The present work is a continuation of that carried out by two of the authors with a Hilger quartz spectrograph, Type C, in the region down to 2000 A.U. The present paper deals with the spark and arc emission spectra of magnesium from 2100 A.U. to 1850 A.U. with a Hilger Type A quartz spectrograph, and the vacuum arc spectra of magnesium and selenium from 2300 A.U. to 1400 A.U. with a specially constructed fluorite spectrograph.

In the spark spectrum of magnesium, four new lines have been observed, in the arc spectrum of this metal, eleven, and in the arc spectrum of selenium, some thirty-one.

MAGNESIUM

Experiments

Three sources of radiation, the spark in air, the arc in air, and the arc in vacuo, were used in obtaining the spectra of magnesium. The spark in air was produced by the condensed discharge of a Clapp-Eastham half-kilowatt transformer, giving 10,000 volts at the secondary terminals. With this apparatus a strong thick spark was easily produced.

The arc in air was produced by using rods of magnesium metal in the carbon holders of an ordinary hand-fed arc lamp. The voltage applied was 200 volts, and the current varied from eight to twelve amperes. With such heavy currents the metal soon became hot and exposures had to be intermittent to allow for cooling of the rods.

The type of arc lamp developed for vacuum work by McLennan, Ainslie and Fuller¹ was employed with the fluorite spectrograph, magnesium metal rods being fastened to the electrodes. With good vacua it was found that a current of 4 to 5 amperes at 100 volts produced a brilliant and steady arc.

¹ Proc. Roy. Soc. Ser. A. Vol. 95. Mar. 15, 1919, p. 316.